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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,379	02/13/2004	Kimio Nagasaka	118427	4576

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EXAMINER	
WONG, TINA MEI SENG	
ART UNIT	**PAPER NUMBER**
2874	

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/777,379	NAGASAKA ET AL.	
	Examiner	Art Unit	
	Tina M. Wong	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,12,14-23 and 26* is/are pending in the application.

4a) Of the above claim(s) *24 and 25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,12,14-23 and 26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-25* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This Office action is responsive to applicant's communication submitted on 05 August 2005.

Claim Rejections - 35 USC § 103

Claims 1-9, 12, 14-23 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,491,447 to Aihara.

In regards to claims 1, 2 and 20-23, Aihara discloses an optical module comprising a transparent substrate (31) having light transmittance properties, an optical element (37) arranged on another surface side of the transparent substrate and emits a signal light to the other surface side of the transparent substrate according to a supplied electrical signal (51) or generates an electrical signal (51) according to the intensity of the light supplied from the other surface side of the substrate and a reflective portion (34) arranged on the other surface side of the transparent substrate and changes the path of the light signal substantially 90 degrees (Column 4) to guide the light signal to or from the optical element. (Figure 5a, 5b, and 5c) But Aihara fails to disclose an optical socket attached to an optical plug on the other surface side of the transparent substrate in Figures 5a, 5b, or 5c. However, Aihara discloses a modified form of Figure 5, Figures 8a and 8b. Figure 8a shows a socket (62) and Figure 8b shows a plug (61), which is attached. Figure 8a further shows the optical socket to have guide surfaces (68) with two surfaces substantially parallel to each other and substantially orthogonal to one surface of the transparent substrate and substantially parallel to the other surface of the transparent substrate. Therefore, since Aihara discloses Figure 8 to be a modified form of Figure 5, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have an

optical socket attached to an optical plug on the other surface side of the transparent substrate. Additionally, Aihara does disclose a thick walled portion (31c), which holds an optical fiber (15) and a prismatic portion (31a), which holds the reflective portion integrally formed with the top of the transparent substrate. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have an optical socket (31a) attached to an optical plug (31c), since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. *Nerwin v. Erlichman, 168 USPQ 177, 179*

In regards to claim 3, Aihara discloses a first lens (45), which converges the light. (Column 5)

In regards to claims 4 and 5, Aihara fails to explicitly disclose the first lens to be formed in an optical socket or on the transparent substrate. However, Aihara discloses a unitary structure comprising of a transparent substrate, plug and socket. Therefore, the first lens would be formed in an optical socket or on the transparent substrate since all of the pieces form a unitary piece.

In regards to claim 6, Aihara discloses an optical module comprising a transparent substrate (31) having light transmittance properties, an optical element (37) arranged on another surface side of the transparent substrate and emits a signal light to the other surface side of the transparent substrate according to a supplied electrical signal (51) or generates an electrical signal (51) according to the intensity of the light supplied from the other surface side of the substrate and a reflective portion (34) arranged on the other surface side of the transparent substrate and changes the path of the light signal substantially 90 degrees (Column 4) to guide the light signal to or from the optical element. (Figure 5a, 5b, and 5c) But Aihara fails to

disclose an optical socket attached to an optical plug on the other surface side of the transparent substrate in Figures 5a, 5b, or 5c. However, Aihara discloses a modified form of Figure 5, Figures 8a and 8b. Figure 8a shows a socket (62) and Figure 8b shows a plug (61), which is attached. Therefore, since Aihara discloses Figure 8 to be a modified form of Figure 5, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have an optical socket attached to an optical plug on the other surface side of the transparent substrate. Additionally, Aihara does disclose a thick walled portion (31c), which holds an optical fiber (15) and a prismatic portion (31a), which holds the reflective portion integrally formed with the top of the transparent substrate. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have an optical socket (31a) attached to an optical plug (31c), since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. (*Nerwin v. Erlichman, 168 USPQ 177, 179)* Aihara further fails to disclose a second lens, which converges the light signal. However, Aihara does disclose a positioning surface (33) which transmits/reflects the light signal to the desired location. Furthermore, Aihara discloses a parabolic surface formed as part of the prismatic protrusion (31a) in order to align the light signal to the endface of the optical fiber. (Figure 2) Therefore, although Aihara does not explicitly state a second lens, Aihara discloses similar features of the optical module that performs the same function as a second lens to direct the light to the appropriate place.

In regards to claim 7, Aihara discloses a positioning surface (33) performing a similar function as the second lens being formed in the optical plug since all of the pieces form a unitary piece.

In regards to claim 8, Aihara discloses a parabolic surface formed as part of the prismatic protrusion performing a similar function as the second lens being formed in the optical socket since all of the pieces form a unitary piece.

In regards to claim 9, Aihara discloses a first lens converging the signal light into substantially parallel light and the second lens converging the signal light into substantially parallel light.

In regards to claim 12, Aihara fails to explicitly disclose a pressing device to press the optical plug to the other surface. However, since all of the pieces form a unitary piece, the optical plug is already formed/pressed to the substrate. (Figure 8)

In regards to claims 14, 17 and 18, Aihara discloses a V-shaped groove as guide surfaces. (Column 6)

In regards to claim 15, Aihara discloses two surfaces having projection portions to bias the optical plug. (Figure 8, Column 7 and 8)

In regards to claim 16, although Aihara does not specifically disclose a locking device to hold the plug into the socket, since the plug and socket are integrally formed as one piece, the plug and socket would therefore be held together since they are integrally/unitarily formed. (Figure 8)

In regards to claim 19, Aihara discloses a wiring layer (Figure 5b) on one surface of a transparent substrate (31), arranging an optical element on another surface of the transparent substrate (34, 15), mounting an optical coupling component (37) corresponding to the optical element. For example, Figure 6 shows an optical tape with a plurality of optical components. Aihara further discloses mounting an optical plug and optical socket corresponding to each

optical element on a surface of the substrate, the optical socket having guide surfaces to position the optical plug, where the two surfaces are substantially parallel to each other and substantially orthogonal to one surface of the transparent substrate and substantially parallel to the other surface of the transparent substrate. But Aihara fails to disclose cutting and dividing the transparent substrate into a plurality of regions. However, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have cut and divided the substrate into a plurality of regions since by manufacturing a plurality of small sized modules on a single substrate allowed the modules to be manufactured at lower costs.

In regards to claim 26, Aihara discloses a first lens (45) being arranged on one side surface of the substrate including a convex portion arranged on the substrate.

Response to Arguments

Applicant's arguments filed 05 August 2005 have been fully considered but they are not persuasive.

In regards to claim 1, Applicant argues Aihara does not disclose an optical socket having guide surfaces to position the optical plug, where the guide surfaces have two surfaces substantially parallel to each other and substantially orthogonal to one surface of the transparent substrate and substantially parallel to the other surface of the transparent substrate. However, the Examiner disagrees. As evidenced in Figures 8a,b and stated in the above rejection, Aihara does disclose an optical socket having guide surfaces to position the optical plug with guide surfaces having two surfaces substantially parallel to each other and substantially orthogonal to one surface of the transparent substrate and substantially parallel to the other surface of the transparent substrate.

In regards to claim 6, Applicant argues Aihara does not disclose a second lens and the prismatic protrusion is not equivalent to a second lens. However, the Examiner disagrees. Aihara teaches the prismatic protrusion to have two parts, a reflecting surface (34) and a positioning surface (33). The second part, the positioning surface (33) positions or guides the signal light to the optical transmission path and into an optical fiber.

In regards to claim 26, Applicant argues Aihara does not disclose the first lens arranged on a surface of the substrate and including a convex portion arranged on the transparent substrate. However, the Examiner disagrees. As stated in the above rejection, Aihara does disclose these features. The first lens is arranged on a surface of the transparent substrate and a convex portion is arranged on the convex portion.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tina M. Wong whose telephone number is (571) 272-2352. The examiner can normally be reached on Monday-Friday 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TMW

John D. Lee
Primary Examiner